

TITLE 410 INDIANA STATE DEPARTMENT OF HEALTH

LSA Document #09-7

SUMMARY/RESPONSE TO COMMENTS FROM THE PUBLIC HEARING

The Indiana State Department of Health's (ISDH) Executive Board preliminarily adopted Rule 410 IAC 6-8.2, Residential On-Site Sewage Systems, on March 11, 2009. ISDH published the proposed rule in the March 17, 2010, Indiana Register. A public hearing was held in Indianapolis on April 12, 2010, to solicit comments from the public on the proposed rule. The record of the hearing was held open for submission of written comments, until April 16, 2010. The following parties made comments during the public hearing or submitted written comments:

Dick Blazer, representing the Indiana Onsite Wastewater Professionals Association (DB-IOWPA)

Gary Chapple, Pollution Control Director, Fort Wayne-Allen County Health Department

John Linn, representing the Rural On-Site Wastewater Committee, Indiana Builders Association (JL-IBA)

Jason LeMaster, Hamilton County Health Department

Theo B. Terry, III, representing Bear Onsite, LLC

Gary Steinhardt and Philip Owens, Purdue University, Agronomy Department (PU-AG)

Stuart Meade, Meade Septic Design, Inc.

John Grace & Doug Baer, Dearborn County Health Department (Grace & Baer)

Debbie Barnhizer, Indiana State Department of Health

Dick Blazer, Blazer Excavating

Steve Yeary, Clinton County Health Department

Wesley Burden, Marshall County Health Department

Curtis Turner, Certified Soil Scientist

Scott Rexroth, Clear Water Environmental Systems, Inc.

William Hartsuff, Elkhart County Health Department

Larry Miller, Jackson County Health Department

Steve Miller, Installer

Tim Jones, Mort-Jones Soil Consulting, Inc.

Terry Smith, Adams County Health Department

Heath Butz, Wells County Health Department

The following is a summary of the comments received and ISDH's responses thereto:

General Comments:

Comment by Dick Blazer, IOWPA: I am president of IOWPA, and I came today to just give you our support for this rule. We spent a lot of time helping with the changes and -- well, changes of the rule; and IOWPA, we think it's time for a new rule. And we think the changes have -- will improve the installation of septic systems in the state of Indiana.

Response: No response.

Comment by William Hartsuff: I do want to register my endorsement of the proposed rule and it is my hope that it makes it through this time. You and your staff have done a good job and your good work hasn't gone un-noticed. Good luck with the rest of the process needed to get the rule enacted.

Response: No response.

Comment by Gary Chapple: I'm here to support this rule and the changes.

Response: No response.

Comment by Stuart Meade: Thank you for this opportunity to voice my support for the rule changes. Modifications to our twenty year old septic system rule have been needed for many years. The proposed changes will greatly improve Indiana's septic code through needed additions and clarifications.

Response: No response.

Comment by John Linn, IBA: Regarding the financial impacts of these revisions (as proposed), the IBA estimates the cost of the typical on-site system will increase approximately \$1,050, without drainage, and \$3,150 with drainage. We estimate this to be an approximate 25% to 35% increase in cost; we do not consider this a "small percentage." This will result in a financial impact of approximately \$20,000,000 per year to the citizens of Indiana. This impact could be greatly reduced (up to 65%) by implementing our suggestions set forth above.

Response: The department submitted fiscal impact statements (one for the impacts on small businesses, the other for the total fiscal impact) for this rule revision. Agency staff worked with

small businesses (primarily septic tank manufacturers in Indiana) to determine the fiscal impact on small businesses. The Indiana Economic Development Corporation offered no objection to the economic impact to small businesses, stating that the rule mitigates the cost of compliance while being stringent enough to promote consumer protection and comply with applicable statutes. Agency staff worked with equipment manufacturers, onsite system installers and local health departments to prepare the fiscal impact statement. The original estimate was approximately \$20M for the first year of adoption. Working with the State Budget Agency, collecting additional data from local health departments, and further analysis revealed that the actual costs of implementation would be approximately \$8.5M per year for the first seven years. However, it was determined that over time, the benefits would outweigh the costs in terms of reduced system failures and savings to homeowners. The State Budget Agency recommended approval of the rule changes.

Comment by John Linn, IBA: the IBA conceded on many points which were not very well supported by facts, but based on someone's intuition, such as, Restricting property owner rights before the "Start of Construction;" Increased deferential between trench bottom and perimeter drain (with the pump provision); Dispersal Area Revisions; Flexible pipe connectors at tanks.

Response: In reference to the comment on restricting property owner rights before the start of construction – this is not a change from the current rule, which requires the property owner to obtain a permit from the local health department prior to the start of construction. This is to insure that the property qualifies for a permit, and that the area for the system is designated, before the property owner invests in the actual construction of the house. As to the increased deferential between trench bottom and perimeter drain, this also has not changed from the current rule. The dispersal area revisions actually work in favor of the property owner by requiring less area on the property. As to the flexible pipe connectors at tanks – this is a minimal cost increase – documented by agency as necessary based on field observations. Also, the industry nationwide places great importance on maintaining watertight tanks and connections.

Comment by John Linn, IBA: Again, the IBA applauds the efforts of the ISDH to move forward with revisions and updates to the rule. We stand ready to assist you in your efforts to improve the "Residential On-site Sewage Disposal" program, which is a vital component to promoting affordable housing for the citizens of Indiana.

Response: No response.

Comments by Section:

Definitions:

Comment by Jason LeMaster: Definitions:

- NSF – National Sanitation Foundation (other meanings for NSF are available, i.e. National Science Foundation)
- Effluent – not defined
- Gravity sewer, pressure sewer, effluent force main, pressure distribution lateral, effluent sewer pipe, gravity distribution lateral (Sec 62(d))

- Sewer - residential sewer is defined, but “sewer” is used throughout document. Does this refer to all sewer pipes, gravity sewers, residential sewers, effluent sewers, pressure sewers, header pipes?
- Section 30 (typo) “Residential onsite sewage system” “or onsite system” defined – “needs moved.

Response: A definition for “NSF” is already included. “Effluent” can have many meanings, rendering it difficult to encompass in a single definition – it must be taken in the context of the passage. Also, the term is widely understood by those in the industry. The same can be said for the many types of piping used in onsite sewage systems – whether it is gravity sewers or gravity distribution laterals – when in the context of the passage there have been no problems with these definitions. The residential sewer is defined because it is the link between the building sewer (which is not covered by this rule) and the onsite sewage system. The last comment on section 30 – this was corrected prior to publication in the Indiana Register.

Comment by Grace & Baer: add “Shrink-swell” to definitions list at front of document.

Response: This term is not used in the rule – therefore, to define the term would serve no purpose.

Section 6:

Comment by Jason LeMaster: the bedroom definition is the sole element for sizing septic system based on the soil loading rate. The definition of a bedroom needs to be about a specific space size 70 ft² with elements like egress, closet, bathroom, etc., PERIOD. Including that owner agreement wording in the definition of a bedroom the rule is opening up every room in the house to be a disagreement between the plan reviewer and the submitter. For example a study, game room, playroom (any room not labeled as bedroom) on a second floor or basement that meets the criteria of a bedroom is now a disagreeable item by the owner. The second part of the definition only adds another level of bureaucracy for something that should be specific in its intent.

My examples labeled spaces are bedroom equivalents and those spaces are the ones that an affidavit would be appropriate to require. To improve the definition please move section 6 to Sec 7 as three parts. Furthermore, Sec 6 needs to drop the owner (start paragraph at the word contains) out of paragraph 1 and paragraph 2 needs to disappear from sec. 6 entirely. A bedroom needs to be defined and bedroom equivalents needs to have the declaration statement added.

As written the definition of a bedroom puts all of the power for properly sizing septic systems in the hands of builders, owner, or plan submitters. At this point I will only be able to take their word for it and in my mind knowingly permitting undersized septic systems because people know how to work the system in order to save money on increased tank and absorption fields. ISDH may think that paragraph 2 is a compromise clause, but it will only lead to so much disagreement at the local level that I know I will eventually give into the owners to avoid conflict. Finally who is going to put together a template for recording such a document? In good conscious I will know that I a permitting undersized systems because the dwellings will resale for larger numbers of bedrooms that originally permitted (amazingly that 2nd floor study is now a 4th or 5th bedroom). The problem is bad enough, now you are putting it writing. I am

guessing the BOAC codes for bedroom definitions don't allow for affidavits from owners, this is not a real world definition of a bedroom. Please amend this section!

Comment by Heath Butz: (1) in a residence that the local health department and the owner agree could be occupied for the purpose of sleeping (why don't we use the definition following this statement, there will be many times that we will not agree and a affidavit may be sought) and contains an area of seventy (70) square feet or more, at least one (1) operable window or exterior door for emergency egress or rescue, and, for new construction, a closet; or (2) declared by the owner, by recorded affidavit supplied to the local health department, that will be occupied for sleeping, and that the owner further agrees within the affidavit not to occupy any additional rooms for the purpose of sleeping or otherwise represent to others that any room, beyond the number specified in the affidavit, may be utilized for sleeping, without approval of the local health department. (What happens when the property is sold? It will be very difficult to verify that they are in fact using the approved number of bedrooms. I believe this could lead to smaller system being used for larger than designed wastewater discharges.)

Comment by Terry Smith: I agree with Heath....It sounds too confusing and may be subject to abuse and hard to monitor.

Response: One of the many questions and requests we get is why the current rule does not include a definition of bedroom and that one should be added. The attempt to include a definition bedroom turned out not to be as simple as one would originally think. If the straightforward definition of bedroom were used, there could be rooms in many homes that would never be used as a bedroom. Therefore, the inclusion of the language for an affidavit to be filed with the deed to record the intentions of the homeowner and to advise future purchasers of the number of bedrooms the onsite system was designed to serve.

Section 16:

Comment by Tim Jones: Fill material definition: I don't think that material placed by "natural erosional forces" should be included as these materials are slowly deposited and are not compacted like materials placed by man are. It's generally found in lower positions within the landscape and if drainage can be provided and upslope diversion swales can be constructed then these materials can be utilized.

Response: The definition states "as well as soil recently transported and deposited by natural erosion forces..." The purpose is to include those sites there has been recent natural erosion of a significant level. This wording has been in the current rule since 1990 and has caused no problems that agency staff is aware of.

Section 41:

Comment by Jason LeMaster: Sec 41 – does "pipes" include chambers?

Response: A change has been made to include chambers.

Section 47:

Comment by Jason LeMaster: Sec 47 – "means pipe, layer or gravel, stone or coarse sand, or any combination of..." Should this say "pipe and a layer of gravel," etc. It sounds like the pipe is not necessarily required.

Response: The change has been made.

Section 50:

Comment by Gary Chapple: Section 50, point i, it has been suggested that some modification be put in there to -this is referencing what can't go into a system and has a list there. There's a list of things that can't go into an onsite system. It's been suggested to me that it be clear that any sump pump that's connected to one of those be included in that list so it's clear that sump pumps aren't allowed if they are draining from one of those.

Response: The wording change is not necessary. The prohibition applies whether it is by gravity flow into the onsite sewage system or whether it is pumped. That is typically understood.

Section 52:

Comment by: Gary Chapple: Section 52, point g, this is one of two in here, I think, that's typically referred to as a grandfather clause that exempts pre-existing conditions. This one says the effective date of this rule, and that's a carryover from the current rule. It exempts lots in subdivisions that are platted. The suggestion is that be changed to the date of the current rule, December 21st, 1990, instead of the effective date so it doesn't move forward a provision that's already in there.

Response: The change has been made.

Comment by Stuart Meade: While the proposed rule change doesn't require specific elements on a design drawing (as previously proposed rules have), it *does* make the intent of the design clear.

Sec. 52 (b) Says, "plans of sufficient clarity that it can be verified that the design of the residential onsite sewage system shall comply with the provisions of this rule, and any other information deemed necessary by the health officer." The rule change goes on to reference "plans and design" throughout the document.

Indeed, a design that verifies that the proposed system complies with the requirements of the rule needs to be detailed and comprehensive.

As you know, an accurate, complete and well thought out design is essential for a successful permitting and installation process. A thorough design can eliminate misunderstandings (sometimes very expensive ones) between the health department and the installer prior to the installation. It is also a vital tool for homeowners and builders when soliciting bids from excavators.

Although most local health departments appreciate how helpful a good design may be, many feel that the existing rule does not give them the authority to require much detail. The proposed rule change is an opportunity for the State Department of Health to empower those local health departments by making it clear that this rule change not only allows them to require comprehensive drawings, but in fact it necessitates them.

Local health departments will have a hard time implementing new design drawing requirements unless they coincide with the effective date of the rule change. This is why design requirements and implementation strategies should be considered now and be thoroughly discussed with LCHs before the effective date.

On the flip side, I've seen local health departments, intending to improve their on-site programs, unintentionally do them harm. For example, a few counties do not allow excavators to design the system. Installers are more familiar with system installation than anyone. Shutting them out of the planning and permitting process is a big mistake. Real life experiences and familiarity with septic systems (and state and local septic codes) are great qualifications for designers. Unfortunately, professional registered engineers often lack these qualifications.

Some counties require that the design includes contours but not relevant system elevations and grade shots. I think a lot of these misguided "improvements" in design requirements come from a general misunderstanding of what is helpful and necessary on a design.

Requiring that the proposed system is marked on-site is also extremely important. This allows the health department staff to visit and review the site before the permit is issued. This is a necessary part of the plan review process. This practice should be normal operating procedure for all counties. Commercial designs are often designed by engineering firms who's only site visit is for the purpose of shooting grade in a grid pattern to generate contours. The system design is then often based on generated elevations. These systems should also be marked on-site for the reasons mentioned above. Furthermore, requiring these firms to mark the systems on-site would probably get these firms to focus more on the actual system (and it's elevations), resulting in more accurate and generally useful designs.

Response: Mr. Meade provides good comment. However, there is quite a diversity of opinion as to plan submittal and the whole process of plan submittal. The Wastewater Management Committee of the Indiana Environmental Health Association is in the process of developing a guidance document complete with sample forms for use by local health departments in operating their local programs. The agency believes that this is the optimum approach at this time, rather than to include more specific plan submittal language in this rule revision.

Comment by JL-IBA: Sec 52(c) – The IBA remains unconvinced that a properly operated department needs 45 days to process a permit. The IBA suggests a 15 day process period is more than adequate.

Response: Most residential permits are issued in significantly less than the 15 days recommended by the IBA when all required documentation has been submitted. However, there may be times when the 45 days allowed by the state legislature would be needed to review the full impacts of an application for a permit.

Comment by Larry Miller: Sec 52(c)(2) allows a 48" max. depth. I'm not sure why we would even want to offer that option.

Response: That depth is allowed only for replacement of an existing residential onsite sewage system that is in failure. For new construction, the maximum depth is 36 inches. The greater depth is allowed for existing homesites in order to permit more flexibility in providing for a replacement system where the building sewer may be too deep to permit gravity flow to a soil absorption field.

Comment by JL-IBA: Sec 52(f) – “Grandfather clause” – Aspects of the proposed revisions (specifically, Sec 57 and Sec 63) could potentially render some existing parcels unbuildable. We suggest that parcels created prior to the date of these revisions be allowed deviation from these

new standards, if necessary, to render the parcel buildable. Otherwise, the property owner would be forced to turn to the court system for compensation and satisfaction.

Response: The IBA does not provide documentation as to which provisions of the proposed rule would “potentially” render some existing parcels unbuildable. Agency staff believes that the proposed changes are not substantial enough to render existing building lots unsuitable for an onsite sewage system where they would have been suitable under the existing rules. In fact, some of the proposed changes will make it much easier for existing lots to comply with the rules (e.g. the new requirements for dispersal areas).

Comment by PU-AG: Section 52 f. – “Soil Conservation Service” should be “Natural Resources Conservation Service.”

Response: The change has been made.

Section 53:

Comment by Jason LeMaster: For years we have discussed the importance of O&M and then we got secondary treatment standards that required O&M but the standards eventually cowed down to manufacturers and the requirements for recording O&M to property deeds was never made an actual requirement. Outside of the rule you are working on an “O&M model ordinance” for counties to use that still does not require anything to be recorded on the property deed.

Now that the definition of bedroom says an affidavit of a bedroom is based on an agreement between the owner and the LHD, because the LHD had no defined specification of bedroom to stand on; has to be recorded on the property deed. How is that we can compromise on a bedroom and record it but we can’t get the most critical piece, maintenance.

Response: The Wastewater Management Committee of the Indiana Environmental Health Association recently posted on its website a model county ordinance for operation and maintenance of onsite sewage systems. Agency staff is available to assist counties with the adoption of such programs. However, it was not the intent of this rule revision to mandate operation and maintenance of onsite sewage systems.

Section 56:

Comment by Jason LeMaster: Table II – footnote **** is for sites without a dispersal area, however, 57(a) states all soil absorption fields require dispersal areas.

Response: Footnote **** has been changed to correct this discrepancy.

Comment by Jason LeMaster: Sec 56(b) – “Sewers” shall not be located within fifty feet.... Here is where confusion about the definition of sewer is apparent.

Response: This wording is in the current rule and has never caused a problem in the past. “Sewers” in this context means all of the different types of sewers and has been consistently applied that way.

Comment by PU-AG: Section 56 b. – this paragraph is very confusing. I feel that I am following the intent, but it appears that there could be alternative interpretations. A clearer statement would be an improvement.

Response: This wording has been in the current rule since 1990 and has not caused a problem for those designing onsite systems or those reviewing the plans for onsite systems.

Comment by Jason LeMaster: Sec 56(c) – How is the sewer to be pressure tested? By whom?

Response: Under section 49(a) of this rule, the local board of health has the authority to determine who may pressure test sewers. There are uniform standards for pressure testing. Agency staff can provide reference to these standards to anyone who needs them.

Comment by: Wesley Burden: Also on footnote # 4 is it section 54 that you want referenced? Or do I have an older copy?

Response: This has been changed to section 63

Section 57:

Comment by Jason LeMaster: Table III – footnote 4 is not referenced in the table.

Comment by Wesley Burden: On sec 57 dispersal area - footnote #4 – is that a freestanding footnote or did I miss the line it is attached to?

Response: This has been corrected.

Comment by PU-AG: Section 57 a 2 F – It is highly unlikely that an “A” or “B” horizon in a soil with a glacial till parent material would react with acid. This would not be anticipated but it would be so rare, it would not be an issue.

Response: As this is rare, and would not be an issue even if it occurred, there is no reason to change the language.

Comment by Jason LeMaster: Sec 57 (e)(3) – shall not be located in a closed depression...

Response: This comment is not clear. However, the language in this section is not changed from the current rule, for which there has been no problem with interpretation and application.

Comment by Grace & Baer: Suggest factoring in “shrink-swell” soil and higher slopes (10-15%) language into chapter 6-8.2-57 Dispersal area Sec.57. Combination of the presence of the two factors or other combinations suggested as reasoning for additional dispersal area requirement.

Response: There was no intent to include language concerning shrink-swell soils in this revision of the rule. This is a topic with merit; however, additional study of the subject, and development of language for this complex problem will take time. The revisions proposed should not be delayed in order to develop this issue.

Section 58:

Comment by Stuart Meade: Sec. 58 (d) States: (d) Septic tanks shall not be installed with the top of the riser below the floodway elevation of any flood having a peak discharge equaled or exceeded on the average of once in any one hundred (100) year period. I assume the purpose of this section is to ensure that risers are installed above the 100 year floodplain. Don't we want to use the more restrictive “floodplain” and instead of “floodway”? The proposed wording mentions the floodway/floodplain but never states that the tank is inside it. Suggested Wording: (d) Septic tanks installed inside a floodplain shall be installed with the top of the riser to the ground surface above the floodway's 100 year peak flood elevation.

Response: This goes to section 68(f)(2), where the basic reference to installation in areas prone to flooding is addressed overall. Although the total explanation for this language can be rather lengthy, suffice it to say that the legal reference to “floodway elevation” in the current rule is appropriate, and that it is being properly applied. However, for the sake of clarity, the use of the term “floodplain” is being added to all sections referencing the flooding issue.

Comment by Wesley Burden: What is the reason for the top of the riser to be above the 100 year flood elevation and not the top of the tank or even the inlet and outlet?

Response: The tank, with all its connections, are to be installed watertight. Changes proposed for the inlet and outlet connectors help to insure this.

Section 59:

Comment by Jason LeMaster: Sec 59(p)(6)(C) – HCHD has concerns over the cost of maintenance. Do maintenance records have to be tracked?

Response: This question would be answered by the local officials in each county.

Comment by Theo B. Terry, III: (2) Outlet filters shall:

(A) conform to ANSI/NSF Standard 46, Evaluation of Components and Devices Used in Wastewater Treatment Systems (*need to know which level of certification you are requiring, either 1/8th inch or 1/16th inch, as NSF 46 allows the manufacturer to certify to either level. I recommend the 1/8th inch level as this encompasses the most filter models currently on the market. Since I make both it does not matter to me but it does matter to some of the other manufacturers that only produce the 1/8th inch filtration models*), maintain a current product listing with an ANSI accredited third-party certifier, and bear a listing mark; or

(3) For on-site systems requiring repair, or soil absorption fields requiring replacement, the local health depart may **shall** require an outlet filter.

(E) rated by the manufacturer with a daily flow rate of 1 ½ times the septic tank capacity of the septic tank in which it is housed for residential applications. Example: a 1000 gallon septic tank shall have a filter that has a daily flow rating of at least 1500 GPD as set by the manufacturer.

(F) rated by the manufacturer with a daily flow rate equal to the facilities wastewater daily flow rate for commercial or industrial applications with a minimum daily flow rating of at least 2000 GPD.

Response: As the rule will allow both 1/16 and 1/8 inch filtration models, no changes to that wording is required. Changes have been made to reflect Mr. Terry’s comments concerning the flow rating of the filters for residential onsite systems. As this rule affects only residential systems, no reference is provided in the rule for filters for commercial systems.

Section 61:

Comment by Jason LeMaster: Sec 61(b) – Poly D-Boxes are very prevalent, but not referenced.

Response: Requirements in section 61 for d-boxes must be met by the manufacturers of poly D-boxes, except for the requirements in subsection (b) for concrete boxes. Local health departments may determine the suitability of poly d-boxes using the criteria in this section.

Comment by Jason LeMaster: Sec 61(c) – Is a vent hole required if an elbow is used in distribution box? Size & location?

Response: A vent hole is not required, but it is not prohibited. The local health department may set parameters for the vent hole is one is proposed for use by the designer/installer.

Comment by Curtis Turner: I am designing a septic distribution system that will provide equal amounts of septic effluent to each outlet in a non-conventional manner (the conventional D-Box that requires levelers in each effluent outlet). Is there room in the new rule for innovation and experiment that will allow for these systems to be installed and evaluated? I envision that my effluent distribution box will have 3 inch outlets instead of 4 inch My prototype is about to be evaluated but I want to be sure that all the design elements are according to the rule before final implementation.

Response: Yes.

Section 62:

Comment by Stuart Meade: Sec. 62 (d, 5) States: The invert of each effluent sewer pipe that outlets from a distribution box shall be at the same elevation so that each gravity distribution lateral receives an equal volume of effluent. This wording is unclear. I believe the intent is to have the pipe invert elevations inside the D-box at the same elevation. Instead, it reads that “each effluent sewer pipe”, “shall be at the same elevation”. This can easily be interpreted that all effluent sewers leaving the D-box have to be level throughout their lengths and at the same elevation. Suggested Wording: The invert end of each effluent sewer pipe connected to the distribution box shall be at the same elevation so that each gravity distribution lateral receives an equal volume of effluent.

Response: This is the language in use since 1990, and it has been consistently applied in a proper manner. No change should be necessary.

Section 63:

Comment by PU-AG: Section 63 – Drainage is always a concern with on-site systems. The need for drainage of absorption fields is great, but the methods and the assurance that drainage can provide the 24 inches of aerated soil every day for treatment may be a difficult order. I see no alternatives to the revisions presently but this is one area where more study is needed particularly in the relatively humid conditions in Indiana.

Response: No response.

Comment by Dick Blazer: Sec.63 Drainage I would like to talk about the % of slope on per-drains. As the size of the tile increase the % of slope should decrease. A drainage chart for sizing drain tile states a 4” tile at .2% slope will drain 5.5 acres. A 6” tile at the same slope will drain 16 acres. A 4” tile at .05% will drain 3 acres, while a 6” tile will drain 8 acres. I could send that chart if you like but these charts are on some web-sites. The acres number changes a little on other charts. I am sure you could find this at Purdue. A 3 bedroom system is about .18 acre. I am not concerned with the .2% slope around the septic field it is the slope of the outlet tile. If you go .2% in one half mile you will need 5’ of fall. The drain should be constructed and size at a positive grade sufficient to drain the septic area. I did not see any thing on the outlet tile but most health depts. call that a part of the septic system and requires the same .2% slope. The outlet tile should be solid tile any time there are trees within 75’ or if future trees will be planted. It takes about 3-5 year for a tile to be clogged with root on a low flow tile. Requiring all out tile to be solid will not work all the time, when crossing a farmer field the farmer will require it to be perf. tile to help drain his field for letting the homeowner on his property. The

tile needs size for this area also. One problem with septic drain is that there is not enough water flow to keep the tile clean out. The water from the farmer is good to keep the tile working.

Response: Although a system to serve a three bedroom home is 0.18 acres, the area upslope of that system for which the subsurface drain must intercept the water can be of greatly varying sizes. The proposed rule requires a positive slope of 0.2 feet per 100 feet, which is a slope of 0.002 percent. He is correct, though, that this is 5 feet fall in ½ mile. However, this is for a 4 inch pipe. This amount of fall may be cut in half by using a 6 inch drainage pipe. Wording is inserted to the proposed rule concerning the use of 6 inch drainage pipe. ISDH can provide charts to assist with drain sizing and design.

The requirement concerning trees would be difficult, if not impossible, for local health departments to enforce.

Comment by Dick Blazer: Commits on the drain being constructed 2” into massive clay, glacial till, or fragipan. With the drain always being 2” into till if till would be 60” deep the drain would be installed 62”. If the only outlet is 58” this property would be unbuildable. If you place trenches at 15” and the drain was 36” below trenches the depth would be 51” and that would be ok with out till. Why will the drain not lower the water below trenches 24” if the till is deeper? With the same 60” till and you would place a mound the drain would still have to be 62” deep. Without till the drain would only have to be 32” deep. The same question if 32” is ok with out till and will lower water sufficiently why do we need the drain deeper? For trench systems the rule should say “the drain at least 36” or 2” into till which ever is less”. The same is with mounds only 32”. This had happen from time to time and the health dept was letting us use a mound to make the system as far from the water table. More of the depts. are requiring 2” into till if it is there. I would like for you to be very sure that the rule as written is the only way that systems will work properly as this will make more building sites unacceptable for onsite waste water systems.

Response: The optimum is to place the perimeter drain 2 inches into the massive clay, glacial till, or fragipan to provide assurance that all of the drainage water is being intercepted and that none is flowing underneath the drain and into the soil absorption field. Therefore, if an outlet can be provided by gravity flow, then this placement of the drain depth should be required. Only when a gravity outlet cannot be provided should the drain depth be less.

Comment by Larry Miller: Sec 63(C)(1)(2) that calls for 36" and 32" below will certainly cause some problems in a lot of locations. Currently 30" is a challenge for many properties. The extra 6" will mean no OSS and no new house, unless you want to allow pump assisted drain collection systems for new construction.

Response: If drainage calculations were used, in most cases the drain depths cited in the current rule and commented on by Mr. Miller would be required by the current rule. Therefore, this is not a change from the provisions of the current rule, and lots will not be affected any differently than the current rule.

Comment by Gary Chapple: They are both in Section 63. Under points (b) (5) and (b) (6) it should say that tire chips which meet the requirements of section 67 (c) are suitable for use in the perimeter drain. In section 63 (b) (7) it should reference points (5) and (6) instead of (4) and (5).

Response: Changes made to reflect the comments.

Comment by JL-IBA: Sec 63 (b) 5. & 6. – The IBA remains unconvinced that backfilling the entire drain trench with stone will have any positive effect on the functionality of the drain because we have not found or seen any evidence that supports this case. We suggest this requirement be removed.

Response: This is a continuation of the current requirements that the drain trench upslope of the soil absorption field be backfilled with aggregate to aid in the interception of subsurface water that is moving down the slope, and causing it to be diverted into the drainpipe at the bottom of the drain trench. The proposed rule revisions permits the local health departments to determine if the drain trench surrounding the whole soil absorption field should be backfilled with aggregate. Therefore, the proposed rule revisions do not require that the whole perimeter drain trench be backfilled with aggregate, but permits the local health department to act in an appropriate manner based on the documented needs for such drainage.

Comment by Scott Rexroth: In several meetings I have been at representatives from ISDH stated that the new rule would require perimeter drains to be no greater than 65' apart but I cannot find it in the proposed rule. I am in support of the 65' requirement and believe it should be added.

Response: Changes made to reflect this comment.

Comment by Scott Rexroth: I was told that 6" pipe could be used in perimeter drains with a slope of .01%; I did not see it in the rule either but am in support of this addition as well.

Response: Change made to reflect this comment.

Comment by Jason LeMaster: Sec 63(b)(7) – refers to both wrapping the pipe and geotextile cover over the backfill material. This is confusing. Should this section be split so that one section talks about requirements for wrapping the drainpipe and another talks about geotextile requirement over the backfill material?

Response: Change made to reflect comment.

Comment by JL-IBA: Sec 63 (c) 1. & 2. – Increasing the required vertical separation distance between trench bottom and the drain will render thousands of acres of land unbuildable throughout the State. The IBA remains unconvinced that increasing the vertical separation distance will have any positive effect on public health or water quality because we have not found or seen any evidence that supports this case. We suggest this requirement remain as set forth in the current rule.

Response: This is not a change from the current rule (except that drain depths may be shallower at some sites). If drainage calculations are used to determine the drainage depth required by the current rule, in most cases the required drain depth will be as deep as, or deeper than, the depths proposed in the rule revisions. The option of using these preset depths rather than drainage calculations for every site is to offer a convenience to the system designer.

Comment by Gary Chapple: Section 63, point 7, under that section, says that aggregate used as backfill shall be covered with a geotextile fabric; but the provisions in that section allow it to either come to the surface or to be 6 inches below the surface with soil over it. Putting geotextile

fabric over soil that comes to the surface wouldn't be very practical because it would just be laying there, and so the suggestion is to modify that so' the geotextile fabric only applies to the ones that are 6 inches below the surface with soil to cover it.

Response: Change made to reflect comment.

Comment by Jason LeMaster: Sec 63(f) rodent guards required on all outlets or just those that have surface outlets.

Response: It has always been understood that this applies only to the surface outlets that the owner has control over. This wording has never presented a problem in the current rule.

Comment by Grace & Baer: Can other system types (i.e. Presby Environmental, drip irrigation, etc.) be considered in regard to 6-8.2-63 Drainage paragraph (c) stipulating 36 inch drain separation from trench bottom?

Response: Yes. That is covered in our standards for Technologies New to Indiana, which covers these types of systems.

Comment by Grace & Baer: Minimum distances above seasonal high water tables stipulated in - 63, -69, and -71 seem disconnected, confusing, and or conflicting as “drainage calculations” and separation distances of 20, 24, 32, and 36 are present. It is assumed these are absolute minimums, ideal depths, or engineered depths.

Response: The drain depths are minimums, derived from engineering equations on drainage. When properly understood, they are not disconnected, confusing or conflicting. Those that have been working with drainage for onsite sewage systems will soon realize this. ISDH provides education and training on the state rule for onsite sewage systems and will do so on a statewide basis for the new provisions of this rule.

Comment by Steve Yeary: Specifically, the second sentence of 410 IAC 6-8.2-63 (b)(1) states that "if the site slope exceeds two percent, the subsurface drain may be constructed only on the upslope side of the on-site system." It had been my original understanding that the 2% would be changed to 6% in the new code. Given that we are planning to stay with the 2% with this version, I would like to be sure and reserve the right to require a full perimeter drain on sites which may additional downslope/side drains to realistically lower the water table 24" below the system. Often sites on a 2% slope are positioned close enough the base of a gradual slope that slope reduces further just downslope of the system; one could not expect the water table to be lowered 24" below absorption trench bottoms simply with an upslope drain. Usually in sites with marginal slope (2 through 4 or 5%) I make sure to visit the site and determine whether a curtain drain alone, or a full perimeter (often with stone backfill on the upslope side) is required.

While the new statement seems more conducive to this practice than the old code ("if the site slope exceeds 2%, the subsurface drain shall be constructed only on the upslope side"), I'd like to make sure any new code clearly grants this discretion (assuming we can't get the 2% changed to something greater).

Could anything more be done to clarify that it must be possible to lower the seasonal water table 24" below TB in order to waive the requirement of downslope & side drains by only requiring an upslope drain?

Response: Agency staff is not aware as to Mr. Yeary's understanding that the 2% would be changed to 6%. There has apparently been a miscommunication or misunderstanding. It was determined early that the best approach would be for this part of the drainage requirements to remain the same. The key to this is to make sure that the drain on the upslope side is properly designed, located and constructed to intercept subsurface water moving down the slope.

Comment by Steven Miller: I see in the new rule that they are requiring filter fabric on top of the stone/sand in the perimeter drains. I see no need for this as the grass cover & roots form a barrier over the stone. Furthermore the idea of trying to place fabric at ground level will cause additional problems for landscapers. If at all possible I would like to see this requirement removed.

Response: Requirement modified to eliminate need for barrier material where the aggregate is brought to the ground surface.

Section 64:

Comment by Stuart Meade: Sec. 64 Dosing Tanks: A weep hole and check valve are necessary to drain the force main back to the tank or forward to the D-box (if that's desired). I didn't see any mention of weep holes or check valves in the proposed rule. Perhaps they don't need to be mentioned.

Response: The proposed rule does not prevent the use of a weep hole and check valve if included by the system designer.

Comment by Stuart Meade: Sec. 64 Dosing Tanks: Comment: (j) Mentions the floodway elevations again. See my first comment regarding this wording.

Response: See agency response to Mr. Meade's earlier comment.

Comment by Gary Chapple: In Section 64{f} the current language says, "The liquid holding capacity of a dosing tank must equal the daily average wastewater volume." For a mound system that's dosed four times a day, that provides a tremendous overkill compared to systems that are dosed once a day. So I would suggest changing the wording there to reflect that it has to hold the dosed volume required in the rule, whether you reference each section that gives a dosed volume or how you do that. I didn't have time to write wording there but something to the effect so that it holds the dosed volume for each dose in addition to the others that are listed there.

Response: Change made to reflect comment.

Comment by Jason LeMaster: Sec 64(g) Should this also reference Sections 75(t) and (dd) and 78(4)(B)?

Response: Change made to reflect comment.

Section 65:

Comment by Stuart Meade: Sec. 65 (d,) states: The junction box located in the dose tank riser shall be rated as a NEMA 4X, National Electrical Manufacturers Association, NEMA 250-2003. All connectors to the junction box shall:

It should be clear that the junction box is also allowed (and maybe preferred to be) outside of the riser. Perhaps just adding the following would fix this.

Suggested Wording: (d) The junction box shall be rated as a NEMA 4X, National Electrical Manufacturers Association, NEMA 250-2003 and may be located inside or outside of the riser. All connectors to the junction box shall:

Response: The added wording is not necessary. The rule should not state this preference. The suggested wording change doesn't state that preference anyway.

Section 66:

Comment by Debbie Barnhizer: This is the product [geotextile fabric] that is widely used in Orange County. This is the product that all the fuss is about. It is white and translucent. It easily ruptures with a gentle thumb poke. Harrison and Morgan counties will not allow this material. This meets our code requirement for opening size.

Response: Further research on this issue reveals that this section on barrier material standards needs revision. That revision has been provided for the final rule adoption.

Section 67:

Comment by PU-AG: Section 67 c – Should there be any disposition of the tire chips in the soil used for absorption fields if the system fails or if it is abandon? Are they meant to be left in place?

Response: They may be left in place. See Section 86(b).

Section 68:

Comment by Tim Jones: Site Evaluations: Maybe I missed it in the rule, but I think that a minimum of three soil borings is necessary to determine variability across a proposed absorption field area. All evaluations should be completed by IRSS as I don't think all sanitarians really want to spend a couple of hours doing soil borings down to the bitter end depth needed these days or are inclined to want look for alternative absorption areas if this the first area doesn't work out to the satisfaction of the applicant. We work for hard for our clients and try to lookout for their best interests. IRSS are required to have high ethical standards to provide accurate soil evaluations and really do provide a valuable service. I believe that most health departments charge a site evaluation fee. I think it should be a trained professional providing this service.

Response: Mr. Jones provides some good comment. The proposed rule reflects that when a site evaluation is provided by a private consultant, the private consultant must be certified by the Indiana Registry of Soil Scientists. Few local health departments provide site evaluations that include soils evaluations. Most are referring homeowners to certified soil scientists. Therefore, a wording change for that area would have little impact. As to the 3 soil borings, many local health departments now require that, but additional language must be developed for the location of those borings. It was determined that it is not critical to address those issues in this rule revision.

Section 44:

Comment by Tim Jones: Soil Profile Analysis: This should include the notation of the diagnostic soil horizons present, i.e. A - Bt1 - Bt2 - BC - C, as this would show that the evaluator understands soil profile development and knows when a soil is disturbed or is an anomaly.

Response: The soil horizon notation would certainly be helpful, and under the provisions of 52(b), the local health department may require the submittal of this information where necessary.

Additional work with soil scientists on this issue would be preferable on this issue at this time, rather than mandate the inclusion of the information.

Comment by Jason LeMaster: Sec 68(d)(2) Parent material – especially Wisconsin age glacial till?

Response: This comment is not properly cited or understood.

Comment by Stuart Meade: Sec. 68(f) states: Soil absorption systems shall not be constructed below the floodway elevation of any flood having a peak discharge equaled or exceeded on the average of once in any one hundred (100) year period. Again, isn't floodplain the word you want to use instead? "below the floodway elevation of any flood" is not a good description of what is desired. I assume we do not want trenches installed in the 100 year floodplain or floodway. It is not a concern if the trench bottom is below the 100 year floodway/plain if the trenches are in suitable soils and the trenches are ½ mile from the nearest 100 year floodway/floodplain. Suggested Wording: Sec. 68 (g) Soil absorption systems shall not be constructed in a 100 year floodplain or floodway. The bottom of the septic absorption system, installed within 50 (horizontal) feet of an adjacent 100 year floodplain must be at or above that floodplain's established 100 year flood elevation.

Response: Changes made to clarify the floodplain/floodway discernment. The distance from a delineated floodplain relative to the floodplain elevation has not been related to the agency as an issue of great concern. Therefore no change is made in that respect.

Section 69:

Comment by PU-AG: Section 69 5 A and B – These provisions assume that with a higher content of coarse fragments there is more risk of release of insufficiently treated effluent into the environment. The higher clay content would help to assure this would not happen. I am concerned that there may be unintended consequences. This high content of coarse fragments is not likely to occur in an Indiana soil. There are situations on the terraces of the Wabash River where this is potentially possible in an absorption field. Whether common or not, the presence of coarse fragments would require the effluent to go through the <2mm soil material. The higher the clay content the slower the movement. I am concerned that the higher content of coarse fragments and higher clay content would result in a soil that would not readily transmit effluent. Soils with coarse fragments and high clay content should they occur are poorly structured. These soils would be subject to failure as a result of so little capacity to transmit effluent. It appears to me that a better way to approach these troubling soils would be to require the <2 mm soil material in high coarse fragment soils to be less than 35% clay and finer than loamy sand. This might achieve both treatment of effluent and less risk of overloading the soil.

Response: Changes made after consultation with staff to reflect the above comment and that the National Resources Conservation Service publication "Soil Taxonomy" describes that soils with coarse fragments greater than 35 % behave differently than soils with less than 35% coarse fragments. The same publication makes no statements concerning soils with coarse fragments greater than 50 %

Comment by Jason LeMaster: Sec 69(5) and 71(5) are confusing. Is the soil scientist required to estimate clay and coarse fragment percentages?

Response: 69(5) and 71(5) have been changed. The soil scientist is expected to estimate clay and coarse fragment percentages. That is what they have been trained and certified to do.

Comment by PU-AG: Section 69 6 - The word “in” in the first line does not appear needed.

Response: Change made

Comment by Jason LeMaster: Sec 69(6) is confusing – maybe reword?

Response: No other reviewers have found this to be confusing. Therefore, it does not need to be reworded.

Comment by Grace & Baer: Has consideration been given to lowering load rate (to .25 or < .25 for weak structured clays as noted on 6-8.2-69 selection criteria Table V.

Response: The purpose or intent of this comment is not understood.

Section 71:

Comment by Jason LeMaster: Sec 71(5) & (6) – “trench bottom” should be replaced with “ground surface”

Response: Change made to reflect comment.

Comment by PU-AG: Section 71 5 A and B – Same comment as for Section 69 5 A and B

Response: Changes made after consultation with staff to reflect the above comment and that the National Resources Conservation Service publication “Soil Taxonomy” describes that soils with coarse fragments greater than 35 % behave differently than soils with less than 35% coarse fragments. The same publication makes no statements concerning soils with coarse fragments greater than 50 %

Section 72:

Comment by Jason LeMaster: Sec72(a)(3) – “the most restrictive horizon within twenty-four...” Would provide more clarification if this stated “the most restrictive horizon in the 24” below the trench bottom...” I think of “within” to be above or below the trench.

Response: Change made to reflect comment.

Comment by JL-IBA: Sec. 72(g), 73(f), 74(i), and 75(d) – The IBA strongly encourages resolution of the meaning of “along the contour” and “sloping site”. This issue has plagued the practical application of this rule since its adoption and has resulted in less than optimal absorption field installation throughout the state. The IBA suggests the following solutions:

a) Add the following definitions:

i) “Sloping Site” defined: As used in this rule, “sloping site” means any proposed field location which contains

a slope greater than or equal to 2%.

ii) “Flat Site” defined: As used in this rule, “flat site” means any proposed field location which contains no slope greater than or equal to 2%.

b) Sec. 72(g), 73(f), 74(i), and 75(d) change to:

On flat sites, trenches shall be constructed to minimize the change in trench depth along each trench; however, in no case shall the trench depth be less than the minimum allowed by this rule, or greater than the maximum allowed by this rule.

On sloping sites, absorption trenches of a gravity feed soil absorption system shall be constructed along the contour in such a manner as to minimize the change in trench depth along each trench,

however, in no case shall the trench depth be less than the minimum allowed by this rule, or greater than the maximum allowed by this rule.

Response: This has been a topic of much discussion concerning this provision which is in the current rule. There have been a number of discussions evolving as to how to address and define the installation of systems “along the contour.” The concept is appropriate, the application is constantly debated. The determination was made that this was not a topic for this rule revision – instead, ISDH would work with local health departments, industry representatives and academia through the Wastewater Management Committee of the Indiana Environmental Health Association, to develop a guidance document for system designers and local health departments. This could then be integrated into a future rule revision rather than delay this one.

Comment by Jason LeMaster: Sec 72(r), 73(q), 74(t) 75(o) and 82(c)(1)– Add prior to installation

Response: Change made to reflect comment.

Section 73:

Comment by Gary Chapple: Section 73, point v talks about the total head for a subsurface soil absorption system using flood dosing, says that elevation differs between the effluent pump and the outlet in the distribution box. I would suggest inserting language in there so it reads between the effluent pump and the highest point in the force main, which is usually the outlet of the distribution box, because if one goes up and then back down, you would have to take that into account even though the distribution box might not be as high.

Response: Change made to reflect comment.

Comment by Jason LeMaster: Sec 73(x) – Vent hole requirement? Use of tee or elbow?

Response: No vent hole is required, but the use is not prohibited. The use of a sanitary tee is not the best choice for use with a force main.

Comment by Stuart Meade: Something I forgot to mention is time dosing. Apparently, the proposed rule would not allow it but should. New pump controllers are becoming much more sophisticated and many include an option for time dosing. The proposed rule should allow this technology if it fits the needs of the site and septic.

Response: The use of time dosing is not permitted as part of the design of the systems described in the rule. However, ISDH can (and does) permit the use of time dosing in its Technologies New to Indiana standards. The intent is to include this in a future rule revision, but not to delay this revision with the details of this approach.

Section 74:

Comment by Gary Chapple: Section 74, points e and k, this section is dealing with subsurface gravity feed alternating systems; and both of those reference flood dosed systems. I believe both of those need to be changed to alternating systems.

Response: Changes made to reflect comment.

Section 75:

Comment by Gary Chapple: Section 75, point ee, there's just a typo in there. It says “one-fourth inch hold” and it should be one-fourth inch hole.

Response: Change made to reflect comment.

Section 76:

Comment by Gary Chapple: Section 76, there is a diagram there. This doesn't have anything to do with content. But, in the diagram, a lot of the text in the diagram is not very readable; and something just needs to be done to clean that up so that you can actually see it.

Response: New graphic added which achieves purpose of comment.

Comment by PU-AG: Figure 1 - graphic problems

Response: New graphic added which achieves purpose of comment.

Section 77:

Comment by Stuart Meade: Sec. 77 (e,) States:

(e) The minimum depth of the INDOT Spec. 23 sand under the aggregate bed shall be twelve (12) inches. *Comment:* There is no sand depth requirement in the basal area beyond the 3:1 slope requirement. It says “sand should be placed on the tilled area immediately after tilling” but does not give any depth requirement. *Suggested Wording:* (e) A minimum of 8” of sand depth is required throughout the basal area.

Response: This would be an unnecessary restriction on the design of this system.

Section 78:

Comment by PU-AG: Figure 2 - graphic problems

Response: New graphic added which achieves purpose of comment.

Comment by Stuart Meade: Sec. 78 (E, iv) States: (iv) The lateral holes closest to the end of the aggregate bed shall be eighteen (18) inches from the end of the aggregate bed. *Comment:*

I think this is supposed to describe the minimum distance the lateral needs to be from the end of the gravel bed. *Suggested Wording:* (iv) The lateral ends shall be eighteen (18) inches from the end of the aggregate bed.

Response: As the last hole is in the end of the lateral, both wordings achieve the same goal. However, the change is being made for clarity.

Section 81:

Comment by Stuart Meade: Sec. 81 (a) states: Before tilling the elevated sand mound site:

(1) the effluent force main from the dose tank to the basal area shall be installed to a depth of at least sixteen (16) inches below existing grade; and

(2) the end of the effluent force main shall be fitted with a temporary vertical pipe extending at least three (3) feet above grade and capped.

(b) The effluent force main shall drain back to the dose tank unless it is installed below the frost line, as listed in Table VIII of section 73(w) of this rule, and designed so that no effluent remains in any portion of the effluent force main located above the frost line.

What is the reasoning behind requiring that the force main is always dug in before plowing? Sometimes this is the best method but not always.

Often, the dosing tank can be set right next to the mound (on the side or upslope edge). This makes achieving drain back of the force main simple.

Just slope the force main from the manifold back through the sand to the tank. This way, the ground below the mound is not unnecessarily disturbed by digging a trench.

Burying the force main 16" also might force the dosing tank to be deeper, requiring a taller riser, making pump access more difficult, making tank entrance more dangerous and making the tank more exposed to groundwater.

Furthermore, the proposed rule already requires draining the force main back to the tank, to the field or to remain buried at the frost line. Burying the force main first also puts it in jeopardy of being nicked by the plow.

Each site is different and sometimes burying the force main first would be the best choice but it should not be a requirement.

Beware, my suggested wording is not great.

Suggested Wording:

Sec. 81. (a) Before tilling the elevated sand mound site:

(1) If the effluent force main from the dose tank to the manifold is to be installed prior to plowing, it shall be installed to a depth of at least sixteen (16) inches below existing grade; and

(2) the end of the effluent force main shall be fitted with a temporary vertical pipe extending at least three (3) feet above grade and capped.

(b) The effluent force main shall drain back to the dose tank unless it is installed below the frost line, as listed in Table VIII of section 73(w) of this rule, and designed so that no effluent remains in any portion of the effluent force main located above the frost line.

Response: Mr. Meade has apparently missed the key words of "to the basal area" in section 81(a)(1), which alleviates most of his concerns. It is staff opinion that installing the force main prior to plowing is always the best option – no exception can be thought of.

Comment by: Stuart Meade: The following comment is a new one that involves how the force main on a mound system is prescribed to be installed. I have personally designed over 700 mound systems and am very familiar with their design and installation issues.

Sec. 81. States: "*Sec. 81. (a) Before tilling the elevated sand mound site, the:*

(1) effluent force main from the dose tank to the basal area shall be installed to a depth of at least sixteen (16) inches below existing grade; and

(2) end of the effluent force main shall be fitted with a temporary vertical pipe extending at least three (3) feet above grade and capped."

Installing the force main before plowing the site is a good practice with some but definitely not all mound. Often, the dosing tank is placed right next to the mound system. When the tank is very close, it's much better to route the force main through the mound itself, directly to the manifold instead of through a trench dug under the mound.

Attached is a schematic of what I'm describing.

Installing the force main through the mound (when the tank is close) is beneficial because:

- The force main maintains a steeper slope back the dosing tank. This makes achieving drain back much easier and reduces the potential for sags in the line
- The installation is simpler for the installer
- It allows for the tank to be installed shallower with less riser depth which make the tank contents (i.e. pump) more accessible and reduces the chances for ground water infiltration into the riser and/or tank.
- A force main buried prior to the plow might become crushed, cracked or may be pushed down by the weight of the plow machinery causing a sag in the line where water might pool or a high spot that could result in an air trap.
- Installing the force main through the mound system eliminates the need to dig into the basal area, disturbing and compacting the soil.
- Backfilling this trench may result in under or over compaction of the soil in the force main trench. Over compaction will make this area unable to absorb water from the above mound while an under compacted trench may become a conduit for water movement back to the tank.

When large trees are removed and stumps left in the basal area, we are asked to make the mound system larger to make up for the lost square footage. Digging in a force main with a 3.0' wide bucket and then compacting the area to prevent the effluent from traveling back through this trench equates to a loss of 6-7% of the basal area when the force main is dug in from the end on a flat site.

Every septic site is different and has its unique features and challenges. Installing the force main prior to plowing may be the best installation method on some sites but definitely is not on others. The code's main concern is that drain back is achieved in the force main (or remains full at the frost layer). Drain back requirements are already addressed in other parts of the rule. My scenario is the better way to install the force main when the tank is situated next to the mound.

A easy fix to this section would be to change the word "shall" to "can" or "may". This section can then read as guidance rather than as a requirement.

Response: It is not understood how this is a change from the proposed rule, except that the proposed rule requires the force main installation prior to plowing the site. That has already been addressed in a previous response.

Section 82:

Comment by Larry Miller: Sec 82(C)(3) still allows a moldboard plow. This is just wrong. By design, a plow creates a scraped flat area below the turned soil that impedes the downward flow of liquid. (Sometimes that Purdue AG degree comes in handy) I do not allow moldboard plow in Jackson County and I really think you should re-visit State approval since there are better ways.

Response: A moldboard plow is acceptable if properly used. However, moldboard plows are now rarely used in site preparation so this is really no longer an issue.

Section 86:

Comment by Jason LeMaster: Sec 86(a)(1) “Electrical power must be disconnected at the source. All controls....”

Response: Change made to reflect comment.